SEQUENCE LISTING (PCT-JP2004-15997)
SEQUENCE LISTING

<110>  KAZUSA DNA RESEARCH INSTITUTE FOUNDATION; Institute for Biomedical Research and Innovation

<120>  Novel Plexin Polypeptide, DNA Encoding thereof and Their Use

<130>  PCT-AB04047

<150>  JP 2003-371040
<151>  2003-10-30

<150>  JP 2004-229871
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<170>  PatentIn version 3.1

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gagccgcccc cgggctgagc                                                   80


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<211> 23
<212> DNA
<213> Artificial

<220>
<223> Reverse Primer

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<211> 753
<212> DNA
<213> mouse

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ggcccgcccc ccgcctctcg ccgcctccga gctcccggct cccggccgcg ccgcgcccca     180

tgcactcgcc gcgccgcgca gcccgcgctc gcctggatgg ctcgtcgcgc gcggggcggc     240

gcaccccta gcgcccgggc cgccgcggcc gtccccttgc gtccgcgccc tcactcgcgg      300

ggccctggtc tgctgccgct gcctctgctg ctgctgctcg gggcggcacg ggccggcgcc     360

ctagagatcc agcgccgttt cccctcgccc acgcccacca acaacttcgc cctggacggc     420

acggcgggca ccgtgtactt ggcggcagtg aaccgcctgt accaactgtc gagtgccaac     480

ttgagcctgg aagccgaggc gaccgtgggt cccgtgccgg acagcccgct gtgtcacgcc     540

ccgcagctcc cgcaggcctc gtgcgagcac ccgcggcgcc tcacggacaa ctacaacaaa     600

atcctgcagt ggacccgggg ccagggtctg gtggtcgcgt gcggctccat ctaccagggt     660

ctgtgccagc tgaggcgccg gggcaacatc tcagccctgg ccgtgagctt ccgcctgcc      720

gcgccgaccg cagaaccggt caccgtgttc ccc                                   753


<210> 11
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<212> PRT
<213> mouse

<400> 11

Glu Met Gly Cys Gly Arg Gly Leu His Gly Ala Ala Pro Gly Leu Ser
1               5                  10                  15

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Gly Gln Glu Ala Pro Arg Gly Pro Gly Pro Pro Pro Ala Ser Arg Arg
            35              40              45

Leu Arg Ala Pro Gly Ser Arg Pro Arg Arg Ala Pro Cys Thr Arg Arg
    50              55              60

Ala Ala Gln Pro Ala Leu Ala Trp Met Ala Arg Arg Ala Ala Gly Gly
65              70              75              80

Ala Pro Pro Ser Ala Arg Ala Ala Ala Ala Val Pro Leu Arg Pro Arg
            85              90              95

Pro His Ser Arg Gly Pro Gly Leu Leu Pro Leu Pro Leu Leu Leu Leu
            100             105             110

Leu Gly Ala Ala Arg Ala Gly Ala Leu Glu Ile Gln Arg Arg Phe Pro
    115             120             125

Ser Pro Thr Pro Thr Asn Asn Phe Ala Leu Asp Gly Thr Ala Gly Thr
    130             135             140

Val Tyr Leu Ala Ala Val Asn Arg Leu Tyr Gln Leu Ser Ser Ala Asn
145             150             155             160

Leu Ser Leu Glu Ala Glu Ala Thr Val Gly Pro Val Pro Asp Ser Pro
            165             170             175

Leu Cys His Ala Pro Gln Leu Pro Gln Ala Ser Cys Glu His Pro Arg
            180             185             190

Arg Leu Thr Asp Asn Tyr Asn Lys Ile Leu Gln Leu Asp Pro Gly Gln
    195             200             205

Gly Leu Val Val Ala Cys Gly Ser Ile Tyr Gln Gly Leu Cys Gln Leu
    210             215             220

Arg Arg Arg Gly Asn Ile Ser Ala Leu Ala Val Ser Phe Pro Pro Ala
225             230             235             240

Ala Pro Thr Ala Glu Pro Val Thr Val Phe Pro
            245             250
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<210> 12

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<223>  Forward Primer

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<213>  Artificial

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<223>  Reverse Primer 1

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<211>  23
<212>  DNA
<213>  Artificial

<220>
<223>  Reverse Primer 2

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<213>  mouse

<400>  15
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1               5                   10                  15


Ala Ser Pro Glu Ser Gly Arg Gly Ala Gly Ala Gly Gly Gly Arg Arg
            20                  25                  30


Gly Gln Glu Ala Pro Arg Gly Pro Gly Pro Pro Ala Ser Arg Arg
        35                  40                  45


Leu Arg Ala Pro Gly Ser Arg Pro Arg Arg Ala Pro Cys Thr Arg Arg
    50                  55                  60


Ala Ala Gln Pro Ala Leu Ala Trp Met Ala Arg Arg Ala Ala Gly Gly
65                  70                  75                  80


Ala Pro Pro Ser Ala Arg Ala Ala Ala Ala Val Pro Leu Arg Pro Arg

```
                85                   90                   95

Pro His Ser Arg Gly Pro Gly Leu Leu Pro Leu Pro Leu Leu Leu Leu
            100             105             110


Leu Gly Ala Ala Arg Ala Gly Ala Leu Glu Ile Gln Arg Arg Phe Pro
            115             120             125


Ser Pro Thr Pro Thr Asn Asn Phe Ala Leu Asp Gly Thr Ala Gly Thr
    130             135             140


Val Tyr Leu Ala Ala Val Asn Arg Leu Tyr Gln Leu Ser Ser Ala Asn
145             150             155             160


Leu Ser Leu Glu Ala Glu Ala Thr Val Gly Pro Val Pro Asp Ser Pro
            165             170             175


Leu Cys His Ala Pro Gln Leu Pro Gln Ala Ser Cys Glu His Pro Arg
            180             185             190


Arg Leu Thr Asp Asn Tyr Asn Lys Ile Leu Gln Leu Asp Pro Gly Gln
            195             200             205


Gly Leu Val Val Ala Cys Gly Ser Ile Tyr Gln Gly Leu Cys Gln Leu
    210             215             220


Arg Arg Arg Gly Asn Ile Ser Ala Leu Ala Val Ser Phe Pro Pro Ala
225             230             235             240


Ala Pro Thr Ala Glu Pro Val Thr Val Phe Pro Ser Met Leu Asn Val
            245             250             255


Ala Ala Asn His Pro Asn Ala Ser Thr Val Gly Leu Val Leu Pro Pro
            260             265             270


Thr Ser Gly Thr Gly Gly Ser Arg Leu Leu Val Gly Ala Thr Tyr Thr
            275             280             285


Gly Phe Gly Ser Ala Phe Phe Pro Arg Asn Arg Ser Leu Glu Asp His
    290             295             300


Arg Phe Glu Asn Thr Pro Glu Ile Ala Ile Arg Ser Leu Asp Ala Arg
305             310             315             320


Gly Asp Leu Ala Lys Leu Phe Thr Phe Asp Leu Asn Pro Ser Asp Asp
            325             330             335
```

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Asn Ile Leu Lys Ile Lys Gln Gly Ala Lys Glu Gln His Lys Leu Gly
                340                 345                 350

Phe Val Arg Ala Phe Leu His Pro Ala Val Pro Pro His Ser Ala Gln
            355                 360                 365

Pro Tyr Ala Tyr Leu Ala Leu Asn Ser Glu Ala Arg Ala Gly Asp Lys
        370                 375                 380

Asp Ser Gln Ala Arg Ser Leu Leu Ala Arg Ile Cys Leu Pro Arg Gly
385                 390                 395                 400

Ala Gly Gly Asp Ala Lys Lys Leu Thr Glu Ser Tyr Ile Gln Leu Gly
                405                 410                 415

Leu Gln Cys Ala Gly Gly Ala Gly Arg Gly Asp Leu Tyr Ser Arg Leu
            420                 425                 430

Val Ser Val Phe Pro Ala Arg Glu Gln Phe Phe Ala Val Phe Glu Arg
        435                 440                 445

Pro Gln Gly Ala Pro Gly Ala Arg Asn Ala Pro Ala Ala Leu Cys Ala
    450                 455                 460

Phe Arg Phe Asp Asp Val Gln Ala Ala Ile Arg Ala Ala Arg Thr Ala
465                 470                 475                 480

Cys Phe Val Glu Pro Ala Pro Asp Val Val Ala Val Leu Asp Ser Val
                485                 490                 495

Val Gln Gly Thr Gly Pro Ala Cys Glu Ser Lys Arg Asn Ile Gln Leu
                500                 505                 510

Gln Pro Glu Gln Leu Asp Cys Gly Ala Ala His Leu Gln His Pro Leu
    515                 520                 525

Thr Ile Leu Gln Pro Leu Arg Ala Ser Pro Val Phe Arg Ala Pro Gly
    530                 535                 540

Leu Thr Ala Val Ala Val Ala Ser Ala Asn Asn Tyr Thr Ala Val Phe
545                 550                 555                 560

Leu Gly Thr Ala Thr Gly Arg Leu Leu Lys Ile Ser Leu Asn Glu Ser
                565                 570                 575

Met Gln Val Val Ser Arg Arg Val Leu Thr Val Ala Tyr Gly Glu Pro
                580                 585                 590

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Val His His Val Met Gln Phe Asp Pro Met Asp Pro Gly Tyr Leu Tyr
    595              600              605

Leu Met Thr Ser His Gln Met Ala Arg Val Lys Val Ala Ala Cys Glu
    610              615              620

Val His Ser Thr Cys Gly Asp Cys Val Gly Ala Ala Asp Ala Tyr Cys
625              630          635              640

Gly Trp Cys Thr Leu Glu Thr Arg Cys Thr Leu Gln Gln Asp Cys Thr
          645              650              655

Asn Ser Ser Gln Pro His Phe Trp Thr Ser Ala Ser Glu Gly Pro Ser
          660              665          670

Arg Cys Pro Ala Met Thr Val Leu Pro Ser Glu Ile Asp Val His Arg
        675              680          685

Asp Tyr Thr Gly Met Ile Leu Gln Ile Ser Gly Ser Leu Pro Ser Leu
    690              695          700

Ser Gly Met Glu Met Ala Cys Asp Tyr Gly Asn Gly Val Arg Thr Val
705              710          715              720

Ala Arg Val Pro Gly Pro Ala Tyr Asp His Gln Ile Ala Tyr Cys Asn
        725              730          735

Leu Leu Pro Arg Ala Gln Phe Pro Ser Phe Pro Ala Gly Gln Asp His
        740              745          750

Val Thr Val Glu Met Ser Val Arg Val Lys Gly His Asn Ile Val Ser
        755              760          765

Ala Asn Phe Thr Ile Tyr Asp Cys Ser Arg Ile Gly Gln Val Tyr Pro
    770              775          780

His Thr Ala Cys Thr Ser Cys Leu Ser Thr Gln Trp Pro Cys Ser Trp
785              790          795              800

Cys Ile Gln Leu His Ser Cys Val Ser Asn Gln Ser Gln Cys Gln Asp
          805              810          815

Ser Pro Asn Pro Thr Ser Pro Gln Asp Cys Pro Gln Ile Leu Pro Ser
        820              825          830

Pro Leu Ala Pro Val Pro Thr Gly Gly Ser Gln Asp Ile Leu Val Pro
        835              840          845

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Leu Thr Lys Ala Thr Phe Phe His Gly Ser Ser Leu Glu Cys Ser Phe
    850             855             860

Gly Leu Glu Glu Ser Phe Glu Ala Val Trp Ala Asn Asn Ser Leu Val
865             870             875             880

Arg Cys Asn Gln Val Val Leu His Thr Thr Gln Lys Ser Gln Val Phe
            885             890             895

Pro Leu Ser Leu Lys Leu Lys Gly Pro Pro Asp Arg Phe Leu Asp Ser
            900             905             910

Pro Asn Pro Met Thr Val Val Val Tyr Asn Cys Ala Met Gly Ser Pro
            915             920             925

Asp Cys Ser Gln Cys Leu Gly Arg Glu Asp Leu Gly His Leu Cys Val
    930             935             940

Trp Asn Asp Gly Cys Arg Leu Arg Gly Pro Leu Gln Pro Leu Pro Gly
945             950             955             960

Thr Cys Pro Ala Pro Glu Ile Arg Ala Ile Glu Pro Leu Ser Gly Pro
            965             970             975

Leu Asp Gly Gly Thr Leu Leu Thr Ile Arg Gly Arg Asn Leu Gly Arg
            980             985             990

Arg Leu Ser Asp Val Ala His Gly Val Trp Ile Gly Ser Val Ala Cys
            995             1000            1005

Glu Pro Leu Ala Asp Arg Tyr Thr Val Ser Glu Glu Ile Val Cys
    1010            1015            1020

Ala Thr Gly Pro Ala Ala Gly Ala Phe Ser Asp Val Val Thr Val
    1025            1030            1035

Asn Val Ser Lys Glu Gly Arg Ser Arg Glu Gln Phe Ser Tyr Val
    1040            1045            1050

Leu Pro Thr Val His Ser Leu Glu Pro Ser Met Gly Pro Lys Ala
    1055            1060            1065

Gly Gly Thr Arg Ile Thr Ile His Gly Ser Asp Leu Asn Val Gly
    1070            1075            1080

Ser Met Leu Gln Val Leu Val Asn Asp Thr Asp Pro Cys Thr Asp

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```
      1085                  1090                  1095

Leu Thr Arg Thr Ala Thr Ser  Ile Thr Cys Thr Val  Pro Gly Gly
    1100              1105              1110

Thr Leu Pro Ser Pro Val Pro  Val Cys Val Arg Phe  Glu Ser Arg
    1115              1120              1125

Gly Cys Val His Gly Asn Leu  Thr Phe Trp Tyr Met  Gln Asn Pro
    1130              1135              1140

Val Ile Thr Ala Ile Ser Pro  Gly Arg Ser Pro Val  Ser Gly Gly
    1145              1150              1155

Arg Thr Ile Thr Val Ala Gly  Glu Arg Phe His Met  Val Gln Asn
    1160              1165              1170

Val Ser Met Ala Val His His  Ile Gly Arg Glu Pro  Thr Phe Cys
    1175              1180              1185

Lys Val Leu Asn Ser Thr Leu  Ile Thr Cys Pro Ser  Pro Gly Ala
    1190              1195              1200

Leu Ser Asn Ala Ser Ala Pro  Val Asp Phe Phe Ile  Asn Gly Arg
    1205              1210              1215

Ala Tyr Ala Asp Glu Ala Ala  Glu Glu Leu Leu Asp  Pro Ala Glu
    1220              1225              1230

Ala Gln Arg Gly Ser Arg Phe  Arg Leu Asp Tyr Leu  Pro Asn Pro
    1235              1240              1245

Gln Phe Ser Thr Ala Lys Arg  Glu Lys Trp Ile Lys  His His Pro
    1250              1255              1260

Gly Glu Pro Leu Thr Leu Val  Ile His Lys Glu Gln  Asp Ser Leu
    1265              1270              1275

Gly Leu Glu Ser His Glu Tyr  His Ile Lys Ile Gly  Gln Val Ser
    1280              1285              1290

Cys Asp Ile Gln Ile Ile Ser  Asp Arg Val Ile His  Cys Ser Val
    1295              1300              1305

Asn Glu Ser Leu Gly Thr Ala  Glu Gly Gln Leu Pro  Ile Thr Ile
    1310              1315              1320
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Gln Val Gly Asn Phe Asn Gln Thr Ile Ala Thr Leu Gln Leu Gly
1325            1330            1335

Gly Ser Glu Thr Ala Ile Val Val Ser Ile Val Ile Cys Ser Val
1340            1345            1350

Leu Leu Leu Leu Ser Val Val Ala Leu Phe Val Phe Cys Thr Lys
1355            1360            1365

Ser Arg Arg Ala Glu Arg Tyr Trp Gln Lys Thr Leu Leu Gln Met
1370            1375            1380

Glu Glu Met Glu Ser Gln Ile Arg Glu Glu Ile Arg Lys Gly Phe
1385            1390            1395

Ala Glu Leu Gln Thr Asp Met Thr Asp Leu Thr Lys Glu Leu Asn
1400            1405            1410

Arg Ser Gln Gly Ile Pro Phe Leu Glu Tyr Lys His Phe Val Thr
1415            1420            1425

Arg Thr Phe Phe Pro Lys Cys Ser Ser Leu Tyr Glu Glu Arg Tyr
1430            1435            1440

Val Leu Pro Ser Lys Thr Leu Asn Ser Gln Gly Gly Ser Pro Pro
1445            1450            1455

Gln Glu Thr His Pro Leu Leu Gly Glu Trp Asn Ile Pro Glu His
1460            1465            1470

Cys Arg Pro Ser Met Glu Glu Gly Ile Ser Leu Phe Ser Ser Leu
1475            1480            1485

Leu Asn Asn Lys His Phe Leu Ile Val Phe Val His Ala Leu Glu
1490            1495            1500

Gln Gln Lys Asp Phe Ala Val Arg Asp Arg Cys Ser Leu Ala Ser
1505            1510            1515

Leu Leu Thr Ile Ala Leu His Gly Lys Leu Glu Tyr Tyr Thr Ser
1520            1525            1530

Ile Met Lys Glu Leu Leu Val Asp Leu Ile Asp Ala Ser Ala Ala
1535            1540            1545

Lys Asn Pro Lys Leu Met Leu Arg Arg Thr Glu Ser Val Val Glu
1550            1555            1560

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Lys Met Leu Thr Asn Trp Met Ser Ile Cys Met Tyr Gly Cys Leu
    1565            1570            1575

Arg Glu Thr Val Gly Glu Pro Phe Phe Leu Leu Leu Cys Ala Ile
    1580            1585            1590

Lys Gln Gln Ile Asn Lys Gly Ser Ile Asp Ala Ile Thr Gly Lys
    1595            1600            1605

Ala Arg Tyr Thr Leu Asn Glu Glu Trp Leu Leu Arg Glu Asn Ile
    1610            1615            1620

Glu Ala Lys Pro Arg Asn Leu Asn Val Ser Phe Gln Gly Cys Gly
    1625            1630            1635

Met Asp Ser Leu Ser Val Arg Ala Met Asp Thr Asp Thr Leu Thr
    1640            1645            1650

Gln Val Lys Glu Lys Ile Leu Glu Ala Phe Cys Lys Asn Val Pro
    1655            1660            1665

Tyr Ser Gln Trp Pro Arg Ala Glu Asp Val Asp Leu Glu Trp Phe
    1670            1675            1680

Ala Ser Ser Thr Gln Ser Tyr Val Leu Arg Asp Leu Asp Asp Thr
    1685            1690            1695

Ser Val Val Glu Asp Gly Arg Lys Lys Leu Asn Thr Leu Ala His
    1700            1705            1710

Tyr Lys Ile Pro Glu Gly Ala Ser Leu Ala Met Ser Leu Thr Asp
    1715            1720            1725

Lys Lys Asp Ser Thr Leu Gly Arg Val Lys Asp Leu Asp Thr Glu
    1730            1735            1740

Lys Tyr Phe His Leu Val Leu Pro Thr Asp Glu Leu Val Glu Pro
    1745            1750            1755

Lys Lys Ser His Arg Gln Ser His Arg Lys Lys Val Leu Pro Glu
    1760            1765            1770

Ile Tyr Leu Thr Arg Leu Leu Ser Thr Lys Gly Thr Leu Gln Lys
    1775            1780            1785

Phe Leu Asp Asp Leu Phe Lys Ala Ile Leu Ser Ile Arg Glu Asp
    1790            1795            1800

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```
Lys Pro Pro Leu Ala Val Lys Tyr Phe Phe Asp Phe Leu Glu Glu
    1805             1810             1815


Gln Ala Glu Lys Arg Gly Ile Ser Asp Pro Asp Thr Leu His Ile
    1820             1825             1830


Trp Lys Thr Asn Ser Leu Pro Leu Arg Phe Trp Val Asn Ile Leu
    1835             1840             1845


Lys Asn Pro Gln Phe Val Phe Asp Ile Glu Lys Thr Asp His Ile
    1850             1855             1860


Asp Ala Cys Leu Ser Val Ile Ala Gln Ala Phe Ile Asp Ala Cys
    1865             1870             1875


Ser Ile Ser Asp Leu Gln Leu Gly Lys Asp Ser Pro Thr Asn Lys
    1880             1885             1890


Leu Leu Tyr Ala Lys Glu Ile Pro Glu Tyr Arg Lys Thr Val Gln
    1895             1900             1905


Arg Tyr Tyr Lys Gln Ile Gln Asp Met Thr Pro Leu Ser Glu Gln
    1910             1915             1920


Glu Met Asn Ala His Leu Ala Glu Glu Ser Arg Lys Tyr Gln Asn
    1925             1930             1935


Glu Phe Asn Thr Asn Val Ala Met Ala Glu Ile Tyr Lys Tyr Ala
    1940             1945             1950


Lys Arg Tyr Arg Pro Gln Ile Met Ala Ala Leu Glu Ala Asn Pro
    1955             1960             1965


Thr Ala Arg Arg Thr Gln Leu Gln His Lys Phe Glu Gln Val Val
    1970             1975             1980


Ala Leu Met Glu Asn Asn Ile Tyr Glu Cys Tyr Ser Glu Ala
    1985             1990             1995
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cgggcccgcc ccccgcctct cgccgcctcc gagctcccgg ctcccggccg cgccgcgccc     180

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Arg Ala Pro Gly Ser Arg Pro Arg Arg Ala Pro Cys Thr Arg Arg Ala
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Ala Gln Pro Ala Leu Ala Trp Met Ala Arg Arg Ala Ala Gly Gly Ala
65                  70                  75                  80


Pro Pro Ser Ala Arg Ala Ala Ala Ala Val Pro Leu Arg Pro Arg Pro
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His Ser Arg Gly Pro Gly Leu Leu Pro Leu Pro Leu Leu Leu Leu Leu
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Gly Ala Ala Arg Ala Gly Ala Leu Glu Ile Gln Arg Arg Phe Pro Ser
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Pro Thr Pro Thr Asn Asn Phe Ala Leu Asp Gly Thr Ala Gly Thr Val
    130                 135                 140


Tyr Leu Ala Ala Val Asn Arg Leu Tyr Gln Leu Ser Ser Ala Asn Leu
145                 150                 155                 160


Ser Leu Glu Ala Glu Ala Thr Val Gly Pro Val Pro Asp Ser Pro Leu
            165                 170                 175


Cys His Ala Pro Gln Leu Pro Gln Ala Ser Cys Glu His Pro Arg Arg
            180                 185                 190


Leu Thr Asp Asn Tyr Asn Lys Ile Leu Gln Leu Asp Pro Gly Gln Gly
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Leu Val Val Ala Cys Gly Ser Ile Tyr Gln Gly Leu Cys Gln Leu Arg

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Pro Thr Ala Glu Pro Val Thr Val Phe Pro Ser Met Leu Asn Val Ala
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Ala Asn His Pro Asn Ala Ser Thr Val Gly Leu Val Leu Pro Pro Thr
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Ser Gly Thr Gly Gly Ser Arg Leu Leu Val Gly Ala Thr Tyr Thr Gly
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Phe Gly Ser Ala Phe Phe Pro Arg Asn Arg Ser Leu Glu Asp His Arg
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Phe Glu Asn Thr Pro Glu Ile Ala Ile Arg Ser Leu Asp Ala Arg Gly
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Asp Leu Ala Lys Leu Phe Thr Phe Asp Leu Asn Pro Ser Asp Asp Asn
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Ile Leu Lys Ile Lys Gln Gly Ala Lys Glu Gln His Lys Leu Gly Phe
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Val Arg Ala Phe Leu His Pro Ala Val Pro Pro His Ser Ala Gln Pro
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Tyr Ala Tyr Leu Ala Leu Asn Ser Glu Ala Arg Ala Gly Asp Lys Asp
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Ser Gln Ala Arg Ser Leu Leu Ala Arg Ile Cys Leu Pro Arg Gly Ala
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Gly Gly Asp Ala Lys Lys Leu Thr Glu Ser Tyr Ile Gln Leu Gly Leu
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Gln Cys Ala Gly Gly Ala Gly Arg Gly Asp Leu Tyr Ser Arg Leu Val
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Ser Val Phe Pro Ala Arg Glu Gln Phe Phe Ala Val Phe Glu Arg Pro
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Gln Gly Ala Pro Gly Ala Arg Asn Ala Pro Ala Ala Leu Cys Ala Phe
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Arg Phe Asp Asp Val Gln Ala Ala Ile Arg Ala Ala Arg Thr Ala Cys
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Gln Gly Thr Gly Pro Ala Cys Glu Ser Lys Arg Asn Ile Gln Leu Gln
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Pro Glu Gln Leu Asp Cys Gly Ala Ala His Leu Gln His Pro Leu Thr
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Ile Leu Gln Pro Leu Arg Ala Ser Pro Val Phe Arg Ala Pro Gly Leu
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Thr Ala Val Ala Val Ala Ser Ala Asn Asn Tyr Thr Ala Val Phe Leu
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Gly Thr Ala Thr Gly Arg Leu Leu Lys Ile Ser Leu Asn Glu Ser Met
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Gln Val Val Ser Arg Arg Val Leu Thr Val Ala Tyr Gly Glu Pro Val
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His His Val Met Gln Phe Asp Pro Met Asp Pro Gly Tyr Leu Tyr Leu
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Met Thr Ser His Gln Met Ala Arg Val Lys Val Ala Ala Cys Glu Val
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His Ser Thr Cys Gly Asp Cys Val Gly Ala Ala Asp Ala Tyr Cys Gly
625             630             635             640

Trp Cys Thr Leu Glu Thr Arg Cys Thr Leu Gln Gln Asp Cys Thr Asn
            645             650             655

Ser Ser Gln Pro His Phe Trp Thr Ser Ala Ser Glu Gly Pro Ser Arg
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Cys Pro Ala Met Thr Val Leu Pro Ser Glu Ile Asp Val His Arg Asp
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Tyr Thr Gly Met Ile Leu Gln Ile Ser Gly Ser Leu Pro Ser Leu Ser
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Gly Met Glu Met Ala Cys Asp Tyr Gly Asn Gly Val Arg Thr Val Ala
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**Page 30**

Arg Val Pro Gly Pro Ala Tyr Asp His Gln Ile Ala Tyr Cys Asn Leu
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Leu Pro Arg Ala Gln Phe Pro Ser Phe Pro Ala Gly Gln Asp His Val
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Thr Val Glu Met Ser Val Arg Val Lys Gly His Asn Ile Val Ser Ala
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Asn Phe Thr Ile Tyr Asp Cys Ser Arg Ile Gly Gln Val Tyr Pro His
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Thr Ala Cys Thr Ser Cys Leu Ser Thr Gln Trp Pro Cys Ser Trp Cys
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Pro Asn Pro Thr Ser Pro Gln Asp Cys Pro Gln Ile Leu Pro Ser Pro
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Leu Ala Pro Val Pro Thr Gly Gly Ser Gln Asp Ile Leu Val Pro Leu
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Thr Lys Ala Thr Phe Phe His Gly Ser Ser Leu Glu Cys Ser Phe Gly
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Cys Asn Gln Val Val Leu His Thr Thr Gln Lys Ser Gln Val Phe Pro
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Leu Ser Leu Lys Leu Lys Gly Pro Pro Asp Arg Phe Leu Asp Ser Pro
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Asn Pro Met Thr Val Val Val Tyr Asn Cys Ala Met Gly Ser Pro Asp
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Cys Ser Gln Cys Leu Gly Arg Glu Asp Leu Gly His Leu Cys Val Trp
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Asn Asp Gly Cys Arg Leu Arg Gly Pro Leu Gln Pro Leu Pro Gly Thr
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Cys Pro Ala Pro Glu Ile Arg Ala Ile Glu Pro Leu Ser Gly Pro Leu
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Asp Gly Gly Thr Leu Leu Thr Ile Arg Gly Arg Asn Leu Gly Arg Arg
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Leu Ser Asp Val Ala His Gly Val  Trp Ile Gly Ser Val  Ala Cys Glu
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Pro Leu Ala Asp Arg Tyr Thr  Val Ser Glu Glu Ile  Val Cys Ala
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Thr Gly Pro Ala Ala Gly Ala  Phe Ser Asp Val Val  Thr Val Asn
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Val Ser Lys Glu Gly Arg Ser  Arg Glu Gln Phe Ser  Tyr Val Leu
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Gly Thr Arg Ile Thr Ile His  Gly Ser Asp Leu Asn  Val Gly Ser
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Met Leu Gln Val Leu Val Asn  Asp Thr Asp Pro Cys  Thr Asp Leu
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Thr Arg Thr Ala Thr Ser Ile  Thr Cys Thr Val Pro  Gly Gly Thr
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Leu Pro Ser Pro Val Pro Val  Cys Val Arg Phe Glu  Ser Arg Gly
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Cys Val His Gly Asn Leu Thr  Phe Trp Tyr Met Gln  Asn Pro Val
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Ile Thr Ala Ile Ser Pro Gly  Arg Ser Pro Val Ser  Gly Gly Arg
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Thr Ile Thr Val Ala Gly Glu  Arg Phe His Met Val  Gln Asn Val
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Ser Met Ala Val His His Ile  Gly Arg Glu Pro Thr  Phe Cys Lys
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Val Leu Asn Ser Thr Leu Ile  Thr Cys Pro Ser Pro  Gly Ala Leu
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Ser Asn Ala Ser Ala Pro Val  Asp Phe Phe Ile Asn  Gly Arg Ala
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Tyr Ala Asp Glu Ala Ala Glu Glu Leu Leu Asp Pro Ala Glu Ala
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Gln Arg Gly Ser Arg Phe Arg Leu Asp Tyr Leu Pro Asn Pro Gln
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Glu Pro Leu Thr Leu Val Ile His Lys Glu Gln Asp Ser Leu Gly
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